EMBRYOLOGY.[1]

Frog Embryos.—The surface views of early stages in the larval life of *Rana temporaria* presented by Friedrich Ziegler[2] form a pleasing contrast to many of the crude representations too often seen, even in important papers upon amphibian embryology. As life-like and accurate reproductions of the actual conditions observed, his figures of the blastopore, medullary folds, mouth, olfactory pits and adhesive disks merit the highest praise, and the method he resorted to seems destined to lead to much more satisfactory observations and drawing than could be expected from the methods in vogue. He simply inclines the microscope tube into a horizontal position and observes the frog spawn in a test tube placed beneath the stage, the illuminator and diaphragm being removed. A large condensing lens is also used to concentrate gas-light or sun-light upon the embryos. It is to be hoped the author will publish a complete series of such illustrations of the ontogeny of some frog.

Pineal Body in Amblystoma.—Immediately following the above article we find a short preliminary note by Albert C. Eycleshymer, of Ann Arbor, Mich. The presence in the embryo of two median dorsal outgrowths in the region of the pineal body is generally conceded, but their relative importance and ultimate fate are matters of uncertainty.

In amblystoma a crescentric evagination arises from the roof of the thalamencephalon when the larva is 5 mm. long; this is the epiphysis or posterior outgrowth. The presence of pigment in the inner ends of the cells and the behavior of their nuclei are strongly suggestive of phenomena seen in the optic vesicles. Much later, when the lens of the lateral eye is invaginating, a second median dorsal outgrowth arises from the posterior part of the roof of the prosencephalon. This is the paraphysis described by Selenka in reptiles. Subsequently both epiphysis and paraphysis undergo similar changes, but remain separate from one another.

The author considers the paraphysis of less importance than the epiphysis, but does not commit himself as to its probable nature. The epiphysis may have been of special use as a sense organ when the

[1]This department is edited by Dr. E. A. Andrews, Johns Hopkins University.

[2]Anatom. Anzeiger, vii. April, 1892.

medullary plate folded in and the lateral eyes were for a time of little use; the lateral eyes are actually present, as the author hopes to show, when the medullary groove first appears.

Polyspermy in Vertebrates.—Dr. J. Rückert[3] has advanced a most interesting explanation of the origin of the yolk-nuclei, parablast-nuclei or *merocyte nuclei* of meroblastic vertebrate ova. Finding these nuclei in eggs of elasmobranchs during, or even before, the union of the ♂ and ♀ pronuclei he was struck by their apparent identity with the male pronucleus. Later he found many sperms present before these yolk nuclei appeared, and also saw transition stages between the two. That this apparent origin of yolk nuclei from sperms may have been exceptional, abnormal, in the few cases observed becomes less probable when the very similar discoveries of Oppel in reptiles are considered.

Oppel[4] observed numerous secondary sperm-nuclei in the eggs of *Anguis fragilis* even before the union of the primary male pronucleus with the female pronucleus, and found them common in eggs of *Lacerta viridis* and *Tropidonotus natrix* also, at the time of union of these chief nuclei. These secondary sperm-nuclei often lie beneath funnel-shaped depressions of the surface of the blastoderm; they form no connection with the female pronucleus, yet undergo division, but soon degenerate and take no direct part in the formation of the embryo. Their significance remains, to Oppel, an open question.

Polyspermy has been noticed in reptiles also by Todaro, in the trout by H. Blanc, in petromyzon and in batrachians by von Kupffer and in insects by Henking and by Blochmann.

These observations upon the wide occurrence of polyspermy, however much they may favor the idea of the normal occurrence of polyspermy in elasmobranchs, offered no clue as to the fate of the supernumerary sperms.

To support his thesis that these sperms become the yolk nuclei, the author makes use of the following rather unsatisfactory evidence:

Having shown that the merocyte nuclei cannot have arisen from the female pronucleus or from the segmentation nucleus, the question as to their origin narrows itself down to some form of external accession, free cell formation being excluded on general grounds. Of such external origin the possibility of inwandering maternal cells cannot be altogether denied, yet that many, possibly all, the yolk nuclei

[3]Anatom. Anzeiger, vii. May, 1892.

[4]Anatom. Anzeiger, vi, 1891. Also Archiv. f. Mik. Anat., xxxix, 1892.

(merocyte nuclei) come from inwandering supernumerary sperms results from the character of the nuclear figures formed in the division of these nuclei. In comparing the cleavage nuclei with the yolk nuclei the author finds that the latter have at most *half as many* chromatin loops in the spindle stage; these loops are also thicker and shorter. Such reduced nuclei can have come only from sexual cells, from sperms in this case.

In spite of this ingenious nuclear criterion the author cannot affirm that all merocyte structures, even in the elasmobranchs studied, arise from polyspermy, so that the meaning and fate of such bodies is not left in a very satisfactory condition.

ENTOMOLOGY.[1]

Iowa Insects.—Prof. Herbert Osborn, of the Iowa Agricultural College, has recently distributed three important papers concerning Iowa insects. The first[2] gives an annotated list of the Orthoptera of Iowa, and the second[3] is a catalogue of the Hemiptera of Iowa. Both are important contributions to our knowledge of insect distribution. The third[4] paper adds lists of the Hymenoptera, Lepidoptera and Coleoptera of the State. The author considers each of these lists as preliminary, and they doubtless will prove very useful in working up more completely the fauna of Iowa.

Distribution of Spiders.—Until very recently our knowledge of the distribution of North American spiders was very incomplete, there being practically no catalogues of the species found in given localities. Several important papers, however, have lately appeared, which add much to our knowledge of the subject. Mr. Nathan Banks has catalogued The Spider Fauna of the Upper Cayuga Lake Basin[5] in an important paper of over seventy pages, illustrated by five full-page plates. Three-hundred and sixty-three species are enumerated, a large number of which are here described for the first time. Dr. George Marx in his annual address as President of the Entomological Society of Washington, last year[6] gave a list of the Araneæ of the

[1]This department is edited by Prof. C. M. Weed, Hanover, N. H.

[2]Trans. Iowa Acad. Sci., Vol. i, pp. 116–120.

[3]Trans. Iowa Acad. Sci., Vol. i, pp. 120–131.

[4]A partial catalogue of the animals of Iowa. Ames, Iowa, 1892.

[5]Proc. Phila. Acad., 1892.

[6]Proc. Ent. Soc. Wash., ii, pp. 148–161.